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of Rafinesque probated in November of that year.

R. ELLSWORTH CALL.

BROOKLYN, N. Y., March 14, 1901.

LUNAR HALO.

TO THE EDITOR OF SCIENCE: On February 25, 1901, there was visible in this locality a lunar halo of rather peculiar form. After vain attempts to find an explanation of it the writer asks the privilege of an appeal to the readers of SCIENCE. This phenomenon consisted of an elliptical ring around the moon with axes apparently about six degrees and nine degrees respectively. The principal axis of the ellipse was vertical while the terminator of light on the moon's surface made an angle of about 45 degrees with the horizon. The moon was about half way down in the southwest and half full. A southeast breeze was blowing and very thin fleecy clouds could be seen passing over the face of the moon. The ring persisted for fifteen minutes or more.

The peculiar orientation of the terminator and major axis is the difficult part to explain. One might expect an elliptical though perhaps ill-defined ring from an elongated source of light, but why should the major axis be inclined to the terminator?

C. M. BROOMALL.

MEDIA, PA., March 23, 1901.

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## *SHORTER ARTICLES.*

### THE LARGEST KNOWN DINOSAUR.

THE Field Columbian Museum paleontological expedition of the past summer was fortunate in securing a number of Dinosaur bones belonging to an animal unique both in size and in proportions. These bones consist of a femur, a humerus, a coracoid, the sacrum, an ilium, a series of seven presacral vertebræ, two caudal vertebræ, and a number of ribs. Part of this collection has been placed on exhibition and the remainder will follow from time to time as the work of preparation proceeds.

The most striking characteristic of this animal, so far developed, is the relative length of the front and hind legs. While the humerus of *Brontosaurus excelsus* Marsh is a little more than two-thirds as long as the femur, the humerus of the individual in question is decidedly the longer bone of the two.

The femur is a stout bone with expanded condyles and a head not constricted from the shaft. The specimen is somewhat crushed antero-posteriorly, but otherwise in a fine state of preservation. Its greatest length parallel to the axis of the shaft is 80 inches (2,003 m.), which is six inches longer than the femur of Marsh's *Atlantosaurus*. The humerus is broad at the proximal end, but unusually slender in the shaft. It has suffered somewhat from weathering, so that the entire surface of the distal end has flaked away, leaving a firm chalcedony core. In this condition its length is equal to that of the femur; with the articular end complete it would probably exceed it by two or more inches. Its present length is greater by 23 inches than the longest humerus hitherto known to science.

The coracoid is broad and straight at the scapular articulation, but less massive than that of *Brontosaurus*. The sacrum is made up of four coossified vertebræ, having small lateral cavities in the centra. A complete rib, presumably from about the sixth presacral vertebræ, measures more than nine feet in length. Some of the thoracic ribs have a secondary tubercle, and also a foramen leading to a cavity in the shaft. However, these may not prove to be constant characteristics.

The similarity of the femur to that of *Atlantosaurus*, together with the presence of but four vertebræ in the sacrum, suggests that this animal may belong to that group. The writer does not feel justified in creating a new genus until the material shall have been sufficiently worked out to make an accurate determination possible. However, the evidence at hand is sufficent to show that we have here to do with an animal which differs radically from any well-known Dinosaur. The extraordinary length of the humerus, together with the size of the coracoid, suggests an animal whose shoulders would rise high above the pelvic region, giving the body something of a giraffe-like proportion. The relatively smaller size of the anterior caudal vertebræ indicates a lesser development of the tail than is common among the sauropod

Dinosaurs. Along with these proportions we may well expect to find a correspondingly shorter neck and perhaps an animal fitted for arboreal food habits. Such a short-necked type was long since suggested by Marsh in his *Apatosaurus laticollis.**

In a future publication of the Field Columbian Museum a complete description of this most interesting Dinosaur will be given.

ELMER S. RIGGS.

FIELD COLUMBIAN MUSEUM,
March 16, 1901.

A RECENT FAULT-SLIP, OGDEN CANYON, UTAH.

IT is generally known that the western face of the Wasatch range, Utah, is determined by a profound fault, and that numerous minor faults are observable at the base of the range. At the mouth of Ogden canyon these secondary faults are particularly plain. Recently there occurred at the locality named a very slight slip along one of the minor fault planes. The movement opened a crack in a mass of gneiss through which a tunnel has been cut as a part of the conduit pertaining to the Ogden Power and Light Company's generating plant. The tunnel walls were fractured, a crack averaging one and a half inches appearing on the inside. The escaping water found outlets on the mountain side at depths of from fifty to a hundred and fifty feet below the tunnel floor, and in its course it carried down many tons of boulders and debris. A steel bridge over the Ogden river was completely destroyed. The disturbance was strictly local, and apparently was due to the escape of water from the tunnel down the plane of faulting, thus constituting a column which by hydrostatic pressure further shifted the block. As to expansion through freezing being the probable cause, there is none but negative evidence. Repairs are in progress. These consist in the removal of the upper part of the shifted block, and in carrying a wooden pipe line through the tunnel.

It appears that the water was first seen issuing from the side of the mountain below the tunnel within a few days after the occurrence of a slight earth-tremor in the vicinity. In the loose alluvial deposits along the mountain front on the north of the canyon mouth, cracks and subsequent settlings have appeared.

J. E. TALMAGE.

* *Amer. Jour Sci.*, Vol XVII., p. 87.

## *QUOTATIONS.*

THE U. S. NAVAL OBSERVATORY.

THE Secretary of the Navy has temporarily ended the Naval Observatory troubles, without the aid of a court of inquiry or court-martial, by detaching Professor Stimson J. Brown from the institution. * * * It would seem from this that Secretary Long shares with Capt. Davis, the superintendent of the Observatory, the belief that Professor Brown transgressed the naval regulations in his efforts to have Congress pass the legislation needed to make the institution a great national one, and not a mere adjunct to the navy. As Capt. Davis's tour of shore duty expires before long, a new superintendent may be looked for within six months, and peace in the Observatory may be expected until the new superintendent and new director of astronomy come to a parting of the ways. Meanwhile, scientists all over the country are being urged to come to the rescue of the Observatory by bringing pressure to bear upon Congress. A bill which met the approval of SCIENCE was introduced in the Senate in the last session by Senator Morgan. It provided for the nationalization of the Observatory and for the appointment as director of an eminent astronomer, 'to be selected from the astronomers of the National Academy of Sciences, unless in the judgment of the President one of higher scientific and executive qualifications be found.' Friends of the institution should see to it that a similar bill is introduced at the opening of the next Congress and vigorously pushed to passage.—The N. Y. *Evening Post.*

POLITICS AND STATE UNIVERSITIES.

To form a just conception of the working of the State university, we should go to the older States of the Central West, where State universities have long been in existence, and where they have had time to shape, in a measure at least, public opinion on university education. In this part of the country the four most conspicuous and liberally supported State universities are those of Michigan, Illinois, Wisconsin